

Atty. Docket No.15210

**CLAIMS**

## 1. A skid steer vehicle comprising:

a chassis having a right side, a left side, a front end, and a rear end;

an engine mounted on the chassis;

two steerable front wheels operably connected to the front end of the chassis, wherein one of the two steerable front wheels is on the right side of the chassis and another of the two steerable front wheels is on the left side of the chassis;

two steerable rear wheels operably connected to the rear end of the chassis, wherein one of the two steerable rear wheels is on the right side of the chassis and another of the two steerable rear wheels is on the left side of the chassis;

at least one steering actuator operably connected to the four steerable front and rear wheels to steer said wheels with respect to the chassis;

at least one hydraulic drive motor operably connected to at least one of the right side wheels;

at least another hydraulic drive motor operably connected to at least one of the left side wheels;

a first hydraulic circuit configured to operate said at least one and said at least another hydraulic drive motors, wherein the first hydraulic circuit is operable (1) to simultaneously drive said at least one hydraulic drive motor in a forward direction

Atty. Docket No.15210

and said at least another hydraulic motor in a backward direction, (2) to simultaneously drive said at least one and said at least another hydraulic motors in a forward direction, and (3) to simultaneously drive said at least one and said at least another hydraulic motors in a backward direction; and

a second hydraulic circuit configured to drive said at least one steering actuator to a first position and to a second position, wherein in said first position the two steerable front wheels are turned left and the two steerable rear wheels are turned right, and wherein in said second position the two steerable front wheels are turned right and the two steerable rear wheels are turned left.

2. The skid steer vehicle of claim 1, wherein said at least one steering actuator includes four steering actuators wherein each of said four steering actuators is coupled to a corresponding one of said four steerable wheels.
3. The skid steer vehicle of claim 2, wherein the four steering actuators are hydraulic cylinders.
4. The skid steer vehicle of claim 1, wherein said at least one and said at least another hydraulic motors include four hydraulic motors, each of said four hydraulic motors being drivingly coupled to a corresponding one of said four steerable wheels.

Atty. Docket No.15210

5. The skid steer vehicle of claim 1, further comprising four gear reduction units, each of said four gear reduction units being drivingly coupled to an associated one of said four steerable wheels.

6. The skid steer vehicle of claim 5, further comprising four wheel hubs drivingly coupled to each of said four steerable wheels, and further wherein each of said four gear reduction units is disposed in a corresponding one of said four wheel hubs.

7. The skid steer vehicle of claim 1, further comprising four steering knuckles each of said four knuckles being coupled to and steerably supporting one of said four steerable wheels.

8. The skid steer vehicle of claim 1, further comprising:

two forward control arms disposed on opposing sides of the chassis, each of said forward arms having a fixed end pivotally coupled to the chassis and a free end extending forward from said fixed end;

two rear control arms disposed on opposing sides of said chassis, each of said rear control arms having a fixed end pivotally coupled to the chassis and a free end extending rearward from said fixed end; and

Atty. Docket No.15210

four steering knuckles, each knuckle coupled to a corresponding free end of said four control arms, wherein each of said four wheels are steerably coupled to a corresponding one of the steering knuckles.

9. A skid steer vehicle comprising:

a chassis having a right side, a left side, a front end, and a rear end;

an engine mounted on the chassis;

four independent suspensions coupled to the chassis wherein the four independent suspensions include:

a spring having a first end coupled to the chassis and a second end;

a control arm having first and second ends and extending fore-and-aft along said vehicle chassis, and being coupled at said first end of said arm to the chassis and to said second end of said spring;

a steering knuckle coupled to the second end of the control arm; and

a wheel coupled to the steering knuckle.

10. The skid steer vehicle of claim 9, further comprising:

at least a first hydraulic motor drivingly coupled to a first pair of said four wheels,

said first pair being disposed on the left side of the vehicle; and

Atty. Docket No.15210

at least a second hydraulic motor drivingly coupled to a second pair of said four wheels, said second pair being disposed on the right side of the vehicle.

11. The skid steer vehicle of claim 10 further comprising:

a drive controller operably coupled to said at least a first and said at least a second hydraulic motors (1) to simultaneously drive said first and second pair of wheels forward, (2) to simultaneously drive said first and second pairs of wheels in reverse, (3) to simultaneously drive said first pairs of wheels forward and said second pair of wheels in reverse, and (4) to simultaneously drive said first pairs of wheels in reverse and said second pair of wheels forward.

12. The skid steer vehicle of claim 11, wherein the drive controller is configured to (1) steer a front pair of said first and second pairs of wheels to the left and to steer a rear pair of said first and second pairs of wheels to the right, and (2) to steer said front pair of said first and second pairs of wheels to the right and to steer said rear pair of said first and second pairs of wheels to the left.

13. The skid steer vehicle of claim 12, wherein a front pair of the four control arms is pivotally coupled to the chassis on opposing sides of the vehicle and extend horizontally forward to their respective second ends and wherein a rear two of the four control arms is

Atty. Docket No.15210

pivotally coupled to the chassis on opposing sides of the vehicle and extend rearward to their respective second ends.

14. The skid steer vehicle of claim 13, further comprising four gear reduction units, each of said four gear reduction units being rotationally coupled to a corresponding one of said four wheels.

15. The skid steer vehicle of claim 14, wherein each of said four gear reduction units is coupled to a corresponding one of said four steering knuckles to be steered thereby.

16. The skid steer vehicle of claim 9, wherein the spring includes a torsion bar.

17. The skid steer vehicle of claim 16, wherein the torsion bar is coupled to and between the control arm and the chassis.

18. The skid steer vehicle of claim 9, wherein the spring includes a hydraulic cylinder responsive to a gas charge in an accumulator.

19. The skid steer vehicle of claim 18, wherein the hydraulic cylinder is coupled to and between the control arm and the chassis.